AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1-19. Canceled.

20. (Currently Amended) A method for cost determination independent of data packet forwarding in a multihop communications network, comprising the steps of:

a computer-controlled node in the multi-hop communications network determining a plurality of simultaneously potential next hop nodes for at least one of multiple nodes from a source node to a destination node in the network, such that said simultaneously potential nodes jointly optimize a predetermined cost function based on a weighted combination of individual costs for each possible next hop node for said at least one of multiple nodes, said plurality of simultaneously potential next hop nodes ~~form~~ forming a subset of the neighboring nodes to said at least one of multiple nodes; and

the computer-controlled node determining ~~the~~ an optimal cost for said at least one of multiple nodes to be equal to the optimized value of the predetermined cost function,

wherein said optimal cost is independent of data packet forwarding in the multihop communications network, and

wherein said optimal cost is dependent of a respective cost for each of said plurality of simultaneously potential next hop nodes.

21. Canceled.

22. (Previously Presented) The method according to claim 20, further comprising optimizing said predetermined cost function based at least partly on a cost factor due to said at least one of multiple nodes.

23. (Currently Amended) The method according to claim 20, further comprising determining a plurality of simultaneously potential next hop nodes and an associated optimal cost node by node[[,]] until a mesh of simultaneously potential routes is provided from the source node to the destination node.

24. (Previously Presented) The method according to claim 20, further comprising determining link parameters that together with the plurality of simultaneously potential next hop nodes jointly optimizes a predetermined cost function.

25. (Previously Presented) The method according to claim 20, further comprising determining the plurality of simultaneously potential next hop nodes for a node i based on optimization of a predetermined cost function f_1 according to:

$$\underset{S''_j \in S''}{Optimize}\ f_1\left(Cost_{S''_{j(k)}}, \Delta Cost_{i,S''_{j(k)}} \middle| \forall S''_{j(k)} \in S''_j\right) \Rightarrow Cost_i(opt), S''_j(opt)$$

where S'' represents all possible next hop nodes for node i, S''_j represents all possible combinations of the nodes in S'', $Cost_{S''_{j(k)}}$ is the individual cost of node $S''_{j(k)}$ in one

particular set $S_j^{"}$, and $\Delta Cost_{i,S_{j(k)}^{"}}$ is the cost of going from node *i* to node $S_{j(k)}^{"}$, and $Cost_i(opt)$ is the optimum cost for node *i* and $S_j^{"}(opt)$ is the set of simultaneously potential next hop nodes.

26. (Previously Presented) The method according to claim 25, further comprising determining the plurality of simultaneously potential next hop nodes for node *i* based on optimization of a predetermined cost function according to:

$$\underset{S_j^{"}\in S^{"}}{Optimize}\left(f_1\left(Cost_{S_{j(k)}^{"}}, \Delta Cost_{i,S_{j(k)}^{"}} \middle| \forall S_{j(k)}^{"} \in S_j^{"}\right)\right) \circ Const_i \Rightarrow Cost_i, S_j^{"}(opt),$$

where $\circ$ is an arbitrary arithmetic operation depending on choice and design goal, and $Const_i$ is a term which node *i* may include in the cost.

27. (Previously Presented) The method according to claim 26, further comprising determining the plurality of simultaneously potential next hop nodes for a node *i* based on optimization of a predetermined cost function according to:

$$Cost_i = \underset{S_j^{"}\in S^{"}}{Optimize}\left\{ \underset{Par}{Optimize}\left\{Cost_{i,S_j^{"}}(Par) \circ f_2\left(Cost_{S_{j(k)}^{"}} \middle| \forall S_{j(k)}^{"} \in S_j^{"}\right)\right\}\right\} \circ Const_i$$

$$\Rightarrow Cost_i(opt), S_j^{"}(opt), Par(opt)$$

where *Par* is an n-dimensional link parameter space, where *n=1, 2,...,* $Cost_{i,S_j''}(Par)$ represents the cost to send data from node i to a node in the set S_j'' as a function of the link parameter space *Par* and the set of nodes S_j'', and *Par(opt)* is the optimum set of link parameters for forwarding data.

28. (Previously Presented) The method according to claim 26, further comprising selecting the term $Const_i$ depending on topology connectivity and/or dynamic properties of the network.

29. (Previously Presented) The method according to claim 26, further comprising selecting the term $Const_i$ depending on stochastic variables.

30. (Previously Presented) The method according to claim 26, further comprising selecting the term $Const_i$ depending on at least one of interference, battery status at node *i* and a queuing situation at said node *i*.

31. (Previously Presented) The method according to claim 20, further comprising associating the cost for a node with at least one of delay, interference, number of hops and path loss.

32. Canceled.

33. (Currently Amended) A system for cost determination independent of data packet forwarding in a multihop communications network~~,~~ including a computer-controlled node comprising:

means for determining a plurality of simultaneously potential next hop nodes for at least one of multiple nodes from a source node to a destination node in the network such that said nodes jointly optimize a predetermined cost function, said plurality of simultaneously potential next hop nodes form a subset of the neighboring nodes to said at least one of multiple nodes; and

means for determining an optimal cost, for said at least one of multiple nodes, to be equal to the optimized value of the predetermined cost function based on a weighted combination of individual costs for each possible next hop node for said at least one of multiple nodes,

wherein said optimal cost is independent of data packet forwarding in the multihop communications network,

wherein said optimal cost dependent of a respective cost for each of said plurality of simultaneously potential next hop nodes.

34. Canceled.

35. (Currently Amended) The system according to claim 33, ~~wherein~~ further comprising means ~~adapted to determine~~ for determining a plurality of simultaneously potential next hop nodes and an associated optimal cost, node by node[[,]] until a mesh of simultaneously potential routes is provided from the source node to the destination node.

36. (Currently Amended) The system according to claim 33, further comprising:

means ~~adapted to determine~~ for determining link parameters that together with the plurality of simultaneously potential next hop nodes jointly optimize a predetermined cost function.

37. (Previously Presented) The system according to claim 33, wherein said ~~determining means~~ means for determining an optimal cost is arranged to determine a predetermined cost function f_1 according to:

$$\underset{S''_j \in S''}{Optimize}\, f_1\left(Cost_{S''_{j(k)}}, \Delta Cost_{i,S''_{j(k)}} \middle| \forall S''_{j(k)} \in S''_j\right) \Rightarrow Cost_i(opt), S''_j(opt)$$

where S'' represents all possible next hop nodes for node i, S''_j represents all possible combinations of the nodes in S'', $Cost_{S''_{j(k)}}$ is the individual cost of node $S''_{j(k)}$ in one particular set S''_j, and $\Delta Cost_{i,S''_{j(k)}}$ is the cost of going from node i to node $S''_{j(k)}$, and $Cost_i(opt)$ is the optimum cost for node i and $S''_j(opt)$ is the set of simultaneously potential next hop nodes.

38. (Currently Amended) A node enabling cost determination independent of data packet forwarding in a multihop communications network, comprising:

means for determining a plurality of simultaneously potential next hop nodes for said node, such that said simultaneously potential next hop nodes jointly optimize a predetermined cost function, said plurality of simultaneously potential next hop nodes form a subset of the neighboring nodes to said at least one of multiple nodes; and

means for determining an optimal cost for the node to be equal to the optimized value of the predetermined cost function based on a weighted combination of individual costs for each possible next hop node for said at least one of multiple nodes,

wherein said optimal cost is independent of data packet forwarding in the multihop communications network,

wherein said optimal cost dependent of a respective cost for each of said plurality of simultaneously potential next hop nodes.

39. Canceled.